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10 November, 2023

Abbey Stockwell, Phase II Municipal Stormwater Permit Writer
WA State Department of Ecology
P.O. Box 47696
Olympia, WA 98504-7696
Via Email: abbey.stockwell@ecy.wa.gov

Re: Comments on proposed municipal stormwater permit reissuance

Dear Abbey Stockwell,

Thank you and the Washington Department of Ecology (Ecology) for the opportunity to comment on the Reissuance of Phase I and Phase II Municipal Stormwater (MS4) General Permits (Permits).

For over 30 years, Communities for a Healthy Bay (CHB) has been working to engage people in the cleanup, restoration, and protection of Commencement Bay and its surrounding natural habitat. We are a 501(c)3 nonprofit working with residents, businesses, and government to offer practical, solutions-based environmental leadership in the Puget Sound area. Our mission is to mobilize popular support for policies that make our communities healthier and more vibrant.

We know that stormwater runoff is the primary source of toxic pollution impacting the Puget Sound. Between the deadly effects of 6PPD/Q on coho salmon populations, the proliferation of plastic and oil pollution, and the excessive sedimentation of our shorelines, it is vital that current and future permits establish effective responses to all known threats. With a five-year permitting cycle, we cannot afford to adopt policies that fail to encompass pressing issues that have already been identified.

Although our comments center on Phase I Permit updates given our history as a Tacoma-based nonprofit, we hope to improve MS4s across the state. By offering additional comments in partnership with organizations like Puget Soundkeeper, Duwamish River Community Coalition, and ReSources, we stand united in pushing for the most robust and responsive permits that will safeguard the health of Washington's waterways.

The concerns we have chosen to comment on here are:

- Addressing MS4 Mapping Discrepancies
- Requiring Capacity for Green Stormwater Infrastructure (GSI) Projects
- Improving Public Participation
- Supporting Visual Monitoring Data/Alerts
- Strengthening Tree Canopy Considerations

Addressing MS4 Mapping Discrepancies

In the draft Phase I permit, permittees are required to maintain mapping data for a number of important stormwater features, including "receiving waters" (S5.C.2.a.ii.). As defined within the permit, receiving waters are:

> "naturally and/or *reconstructed* naturally occurring surface water bodies, such as creeks, streams, rivers, lakes, wetlands, estuaries, and marine waters, or groundwater, to which a MS4 discharges."[1]

As it stands, the City of Tacoma's maps do not accurately reflect the fish passages documented by the Washington Department of Fish and Wildlife (DFW) and Department of Natural Resources (DNR). We believe that the presence of fish passage barriers or otherwise artificial construction has led the City to misclassify some of the receiving waters that feed directly into rivers and the Puget Sound. The assumption that these waterbodies are entirely artificial or should not be classified as receiving waters after being modified does not reflect Ecology's definition. Therefore, we ask for an additional requirement that permittees produce maps that incorporate the fish passage designations from DFW and DNR. Failing to ensure accuracy in these maps poses significant risks to critical waterways and could undermine key stormwater management efforts.

Requiring Capacity for GSI Projects

Although the permit requires Operation and Maintenance (O&M) manuals for all stormwater facilities (S6.E.6.), there are no specific recommendations or directives regarding investments in GSI projects. Permeable pavements, rain gardens, and other Low-Impact Development (LID) options are all listed on the City of Tacoma's GSI webpage, yet there are no incentives or requirements in the permit to support building more of these. Because there are already several examples of effective GSI throughout Tacoma (e.g., Tacoma's Greenroads program, EverGreen Tacoma, the Salishan Community), we request that building O&M capacity for GSI facilities be included in the Minimum Performance Measures. Tacoma clearly has the research and data needed to justify these projects, so providing an official requirement to build GSI capacity would help focus resources on this these important stormwater management tools.

Improving Public Participation

After reviewing several of the education and public involvement requirements throughout the permit [(S5.C.11.), (S6.E.1-2.)], we would like to see more prescriptive definitions of "ongoing opportunities for public involvement." Some of our recommendations on this topic include:

1. Assigning a minimum number of meetings or outreach methods to provide a public engagement benchmark
2. Developing measurable outcomes of community engagement leading to a reduction of identified pollutants (e.g., number of participants who followed up after a workshop)
3. Maintaining annual evaluations of outreach strategy to improve methods throughout the permitting cycle

We recognize that broad definitions are important for providing flexibility in the outreach process, but we feel that reducing ambiguity in these ways would enhance accountability on outreach strategies.

[1] State of Washington Department of Ecology. (2023). Draft Phase I Municipal Stormwater Permit (Redline version), Definitions and Acronyms, 110. https://fortress.wa.gov/ecy/ezshare/wq/permits/MS4_2024_Phase%20I_DraftPermitRedline.pdf

Supporting Visual Monitoring Data/Alerts

As explained in the sections on monitoring and assessment (S8.A-C.), the City of Tacoma has historically elected to contribute to the Stormwater Action Monitoring (SAM) collective fund and complete additional studies on program effectiveness and source identification. According to the City's 2022 Stormwater Management Program (SWMP) Plan, their permit compliance measures included contributing to the SAM fund for regional stream status and trends monitoring in addition to monitoring stormwater discharges at seven outfalls in the Thea Foss Waterway.[2]

At CHB, a key component of our work is our Bay Patrol Program, which requires us to maintain and operate our own patrol vessel to provide routine visual monitoring, waste collection, and public education on Commencement Bay. We work regularly with city, county, and state agencies to report and document pollution events, including those resulting from storm or wastewater outfalls. As a unique and committed local partner who illustrates the utility of consistent and responsive visual monitoring, we urge Ecology to consider an additional provision to S8.C.2.a. that incorporates such work. We imagine a provision that directs permittees to seek partnerships with organizations that can provide additional monitoring of outfalls that are not included in existing monitoring programs. For any permittee who can, directly supporting independent monitoring of other outfalls by those in the community would not only improve stormwater management programs but also expand engagement in the stormwater permitting process.

Strengthening Tree Canopy Considerations

We applaud Ecology for requiring tree canopy mapping for new development (S2.B.iv.) and tree canopy policy implementation supporting LID (S5.C.6.c.ii.) by no later than December 31, 2028. However, we are concerned about the lack of clarity that current tree canopy data would provide regarding bioretention efficiency. Tree type, local atmosphere, soil, and surrounding landscape[3] are all factors that impact the ability of trees and vegetation to serve as stormwater management tools. While canopies themselves can slow the rate of runoff into gray infrastructure, they do not largely effect the total amount of runoff that needs to be processed. Rather, the majority of runoff reduction from GSI results from infiltration through exposed permeable surfaces. Although the draft permit does require the development of enforceable documents to minimize impervious surfaces (S5.C.6.c.i.), these types of considerations should also be incorporated into mapping processes.

Currently, the mapping provisions only require the use of existing tree canopy data, which could limit the ability of Ecology to explore and assess the impact of tree canopies and GSI on stormwater management. The use and development of stormwater management models that consider various factors impacting bioretention capacity (e.g., EPA's GIFMod) would help highlight where and how these management methods might be improved. It would be ideal if research about specific tree canopy conditions were included in these maps.

In lieu of such models, we request that tree canopy mapping include something like a "Stormwater Management Range" that presents the worst-to-best case stormwater management scenarios for related canopy area. A tree planted in the middle of a sidewalk, surrounded by concrete and asphalt

[2] City of Tacoma. (2022). Stormwater Management Program (SWMP) Plan, S8. Monitoring and Assessment, 55. https://www.cityoftacoma.org/UserFiles/Servers/Server_6/File/cms/Surfacewater/SWMPUpdates/SWMP%20Update_2022.pdf

[3] Berland, A., Shiflett, S. A., Shuster, W. D., Garmestani, A. S., Goddard, H. C., Herrmann, D. L., & Hopton, M. E. (2017). The role of trees in urban stormwater management. Landscape and urban planning, 162, 167–177. Table 1. https://doi.org/10.1016/j.landurbplan.2017.02.017

does not have the same impact on stormwater as one planted in a carefully engineered bioretention project. Without additional data or modeling that estimates the site-specific conditions for canopies, a range defined by the best available studies on bioretention would help demonstrate the differences between tailored GSI and isolated tree planting on stormwater management.

Thank you again for the opportunity to comment on this permit reissuance. Please contact us if you have any questions regarding our comments. We will follow up on any responses we receive.

Sincerely,

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Appendix

Factors Impacting Stormwater Management Performance of Trees[4]

Table 1.

Major factors influencing the performance of trees as a stormwater control measure. This is not an exhaustive list. The research community should determine which factors must be quantified to reliably model the stormwater benefits expected from a tree. Key references are cited for each topic.

Tree[1]	Atmosphere[2]	Soil[3]	Landscape[4]
Evergreen/deciduous	Climate zone	Rooting volume	Surrounding land cover
Species	Annual precipitation	Water holding capacity	Impervious surfaces
Phenology (leaf-on period)	Precipitation intensity	Fertility	Watershed position
Size / age	Precipitation duration	Compaction	Pollution (air, water, soil)
Health	Precipitation frequency	Drainage	Tree density
Leaf area index	Time between storm events	Green infrastructure installations (e.g., structural soils)	Open grown vs. overlapping crowns
Leaf morphology	Temperature	Least limiting water range	Ground cover (e.g., shrubs, turfgrass, bare ground)
Branch angle	Evaporative demand		
Bark texture	Wind		
Evapotranspiration rate			
Root structure/depth			Slope/aspect

[1] Asadian & Weiler, 2009; Clapp et al., 2014; Givnish, 2002; Inkiläinen et al., 2013; Livesley et al., 2014; McCarthy et al., 2011; Pataki et al., 2011; Scharenbroch et al., 2016; Van Stan et al., 2015; Wullschleger et al., 2001; Xiao & McPherson, 2002; Xiao & McPherson, 2011; Xiao & McPherson, 2016

[2] Moriwaki & Kanda, 2004; Staelens et al., 2008; Van Stan et al., 2015; Wadzuk et al., 2014; Wang et al., 2011; Xiao & McPherson, 2011; Xiao & McPherson, 2016; Xiao et al., 1998

[3] Bartens et al., 2008, 2009; Bassuk et al., 2005; Day & Dickinson, 2008; Denman et al., 2016; Layman et al., 2016; Scharenbroch et al., 2016

[4] Armson et al., 2013, Hagishima et al., 2007; Inkiläinen et al., 2013; Kjelgren & Montague, 1998; Peters et al., 2011; Wang et al., 2001; Wang et al., 2008; Xiao et al., 1998

[4] Berland, A., et al.